Kramer Electronics, Ltd.

USER MANUAL

Models:

TP-581T, ***HDMI Line Transmitter***

TP-582T, ***HDMI Switcher/Line Transmitter***

TP-582R, ***HDMI Line Receiver DA***

Contents

1	**Introduction**	**1**
2	**Getting Started**	**1**
2.1	Quick Start	2
3	**Overview**	**3**
3.1	Features of the TP-581T, TP-582T and TP-582R	3
3.2	About HDBaseT™ Technology	4
3.3	Using Twisted Pair Cable	4
3.4	Recommendations for Achieving the Best Performance	5
3.5	Safety Instructions	5
3.6	Recycling Kramer Products	5
4	**Your HDMI Line Transmitters/Receiver**	**6**
4.1	Your TP-581T HDMI Line Transmitter	6
4.2	Your TP-582T HDMI Switcher/Line Transmitter	7
4.3	Your TP-582R HDMI Line Receiver DA	8
5	**Connecting the TP-581T, TP-582T and TP-582R**	**9**
5.1	Connecting the TP-582T or TP-581T	9
5.2	Connecting the TP-582R	10
5.3	Controlling the A/V Equipment via an IR Transmitter	12
5.4	Controlling the TP-582T via the REMOTE Terminal Block Connector	14
5.5	Connecting to a PC	14
5.6	Wiring the RJ-45 Connectors	15
5.7	Acquiring the EDID	16
6	**Technical Specifications**	**17**
7	**Default EDID**	**18**

Figures

Figure 1: TP-581T HDMI Line Transmitter 6
Figure 2: TP-582T HDMI Switcher/Line Transmitter 7
Figure 3: TP-582R HDMI Line Receiver DA 8
Figure 4: Connecting the TP-582T/TP-582R Transmitter/Receiver 11
Figure 5: Controlling a DVD Player via the TP-582R 12
Figure 6: Controlling an LCD Display via the TP-582T 13
Figure 7: Connecting the Contact Closure Remote Control PINs 14
Figure 8: TP PINOUT 15

Tables

Table 1: TP-581T HDMI Line Transmitter Features 6
Table 2: TP-582T HDMI Switcher/Line Transmitter Features 7
Table 3: TP-582R HDMI Switcher/Line Receiver Features 8
Table 4: Technical Specifications of the TP-581T, TP-582T and TP-582R 17

1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Congratulations on purchasing your Kramer MegaTOOLS® **TP-581T** *HDMI Line Transmitter*, **TP-582T** *HDMI Switcher/Line Transmitter* or **TP-582R** *HDMI Line Receiver DA* that are ideal for:

- Home theater, presentation and multimedia applications
- Rental and staging

The package includes the following:

- **TP-581T** and/or **TP-582T** and/or **TP-582R**
- Power supply (5V DC)
- IR remote control transmitter (for **TP-582T** only)
- This user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

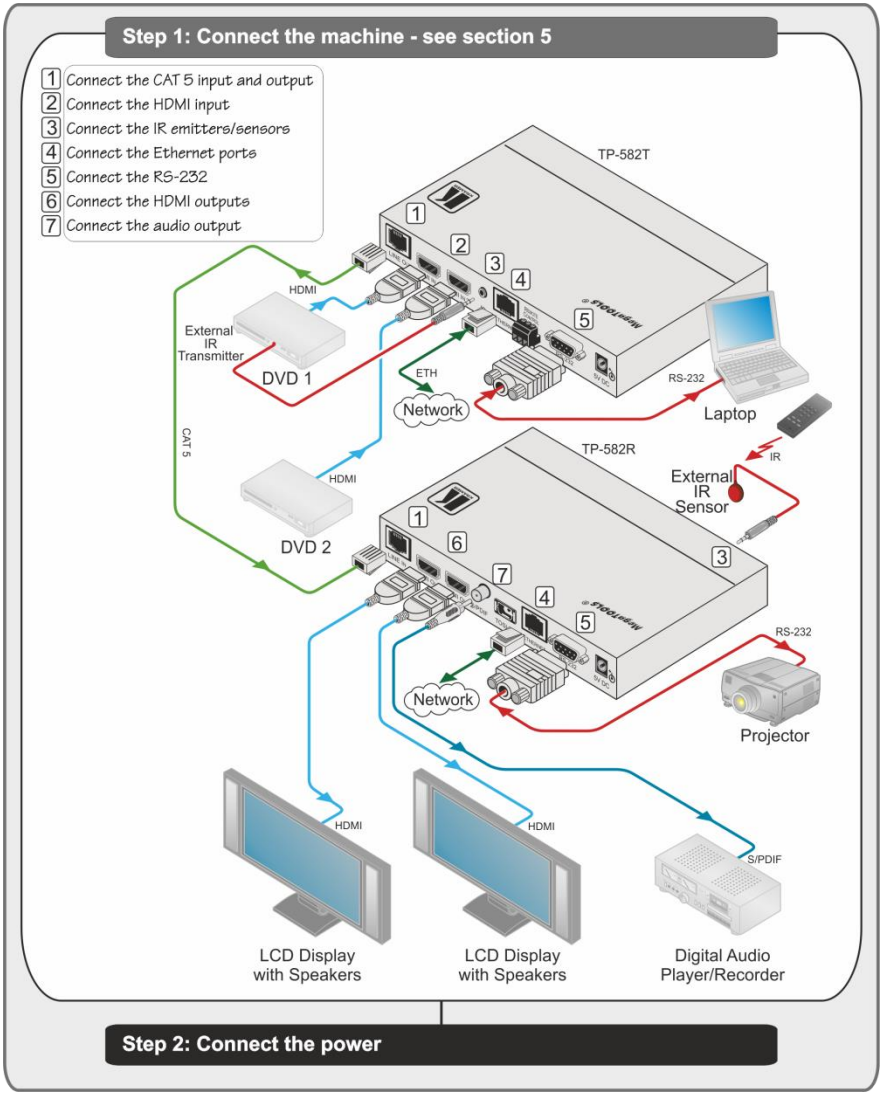
Go to http://www.kramerelectronics.com/support/product_downloads.asp to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from the Internet at http://www.kramerelectronics.com

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.



3 Overview

The **TP-582T** and **TP-582R** are a high-quality twisted pair transmitter and receiver for HDMI, 100BaseT Ethernet, bidirectional RS-232 and IR signals.
With the **TP-582T** you can select one of two HDMI inputs, and convert it with the 100BaseT Ethernet, RS-232 and IR input signals to a twisted pair signal. The **TP-582R** converts the twisted pair signal back to 100BaseT Ethernet, RS-232, IR and two HDMI outputs, and de-embeds the audio to S/PDIF and TOSLINK® audio outputs. The **TP-581T** is identical to the **TP-582T** but has only one HDMI input[1].

For optimum range and performance using HDBaseT™, use Kramer's **BC−HDKat6a** cable. Note that the transmission range depends on the signal resolution, source and display used. The distance using non−Kramer CAT 6 cable may not reach these ranges.

3.1 Features of the TP-581T, TP-582T and TP-582R

This transmitter/receiver pair features:

- Signals of up to 6.75Gbps (up to 1080p@60Hz 36 bit) over a range of up to 130m (430ft) when using BC−HDKat6a cables
- HDTV compatibility
- HDMI support (V.1.4 with Deep Color, x.v.Color™, Lip Sync, HDMI Uncompressed Audio Channels, Dolby TrueHD, DTS-HD, CEC)
- 3D pass through
- HDCP compliance
- EDID PassThru, passes EDID/HDCP signals from source to display
- A bidirectional RS-232 interface over which commands and data can flow in both directions via the RS-232 interface at rates up to 115200, allowing status requests and control of the destination unit
- Bidirectional infrared interface for remote control of peripheral devices (see Section 5.3)
- 100BaseT Ethernet interface for connection to a network (see Section 3.2)
- LED status indicators for input, output, link and power
- Two RJ-45 CAT 5 output connectors: one for the line output and the other for the Ethernet input

1 Since the TP-581T has only one input, it does not have the input selection control which the TP-582T has (that is, contact closure, IR and front panel input selection)

The compact MegaTOOLS® enclosures (for the transmitters and the receiver) let you rack mount up to two units side-by-side in a 1U 19" rack space when using the optional **RK-T2B** rack.

In addition to the common features:

The **TP-582T** *HDMI Switcher/Line Transmitter* also features:

- Two HDMI inputs
- Momentary remote contact closure for input switching
- Front panel input select button
- IR remote control input switching (via the Kramer IR remote control transmitter)
- Front-panel input selection

The **TP-582R** *HDMI Line Receiver DA* also features:

- One RJ-45 CAT 5 input connector
- Two HDMI outputs
- An S/PDIF digital audio output
- A TOSLINK® optical audio output

The **TP-581T** HDMI Line Transmitter also features:

- One HDMI input

3.2 About HDBaseT™ Technology

HDBaseT™ is an advanced all-in-one connectivity technology (Supported by the HDBaseT Alliance). It is particularly suitable in the consumer home environment as a digital home networking alternative where it enables you to replace numerous cables and connectors by a single LAN cable used to transmit uncompressed full high-definition video, audio, 100BaseT Ethernet, power over cable, as well as various control signals.

The products described in this user manual are HDBaseT certified.

3.3 Using Twisted Pair Cable

Kramer engineers have developed special twisted pair cables to best match our digital twisted pair products; the Kramer **BC−HDKat6a** (CAT 6 23 AWG cable) significantly outperforms regular CAT 5 / CAT 6 cables.

We strongly recommend that you use shielded twisted pair cable.

3.4 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your **TP-581T**/**TP-582T**/**TP-582R** away from moisture, excessive sunlight and dust

This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

3.5 Safety Instructions

Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

3.6 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at *http://www.kramerelectronics.com/support/recycling/*.

4 Your HDMI Line Transmitters/Receiver

This section describes the:

- **TP-581T** *HDMI Line Transmitter*, see Section 4.1
- **TP-582T** *HDMI Switcher/Line Transmitter*, see Section 4.2
- **TP-582R** *HDMI Line Receiver DA*, see Section 4.3

4.1 Your TP-581T HDMI Line Transmitter

Figure 1 and Table 1 define the **TP-581T**:

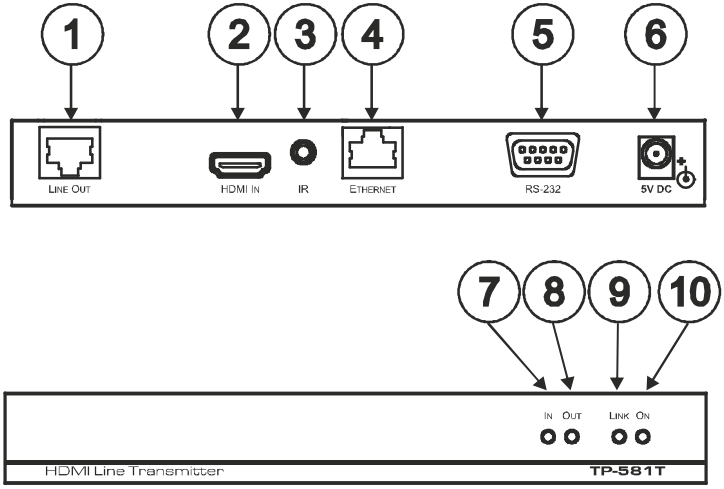


Figure 1: TP-581T HDMI Line Transmitter

Table 1: TP-581T HDMI Line Transmitter Features

#	Feature	Function
1	*LINE OUT* RJ-45 Connector	Connects to the CAT 5 IN RJ-45 connector on the **TP-582R**
2	*HDMI IN* Connector	Connects to the HDMI source
3	*IR* 3.5mm Mini Jack Connector	Connects to an external infrared transmitter / sensor (receiver)
4	*ETHERNET* Connector	Connects to a network
5	*RS-232* 9-pin D-sub Connector	Connects to an RS-232 port
6	*5V DC*	+5V DC connector for powering the unit
7	*IN* LED	Lights when an HDMI input device is connected
8	*OUT* LED	Lights when an HDMI output device is detected
9	*LINK* LED	Lights when the TP connection is active
10	*ON* LED	Lights when receiving power

4.2 Your TP-582T HDMI Switcher/Line Transmitter

Figure 2 and Table 2 define the **TP-582T**:

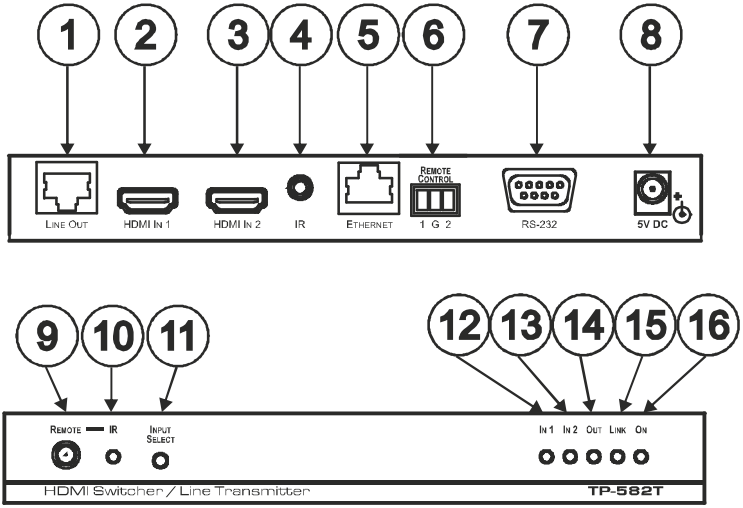


Figure 2: TP-582T HDMI Switcher/Line Transmitter

Table 2: TP-582T HDMI Switcher/Line Transmitter Features

#	Feature	Function
1	*LINE OUT* RJ-45 Connector	Connects to the CAT 5 IN RJ-45 connector on the **TP-582R**
2	*HDMI IN 1* Connector	Connects to the HDMI source 1
3	*HDMI IN 2* Connector	Connects to the HDMI source 2
4	*IR* 3.5mm Mini Jack Connector	Connects to an external infrared transmitter/sensor (receiver)
5	*ETHERNET* Connector	Connects to a network
6	*REMOTE CONTROL* Terminal Block	Connects to contact closure switches (see Section 5.4)
7	*RS-232* 9-pin D-sub Connector	Connects to an RS-232 port
8	*5V DC*	+5V DC connector for powering the unit
9	*REMOTE* IR Sensor	Senses commands from the Kramer IR remote control device[1]
10	*IR* LED	Lights when an infrared signal is detected
11	*INPUT SELECT* Switch	Press to toggle between HDMI inputs
12	*IN 1* LED	Lights when the HDMI 1 input device is connected
13	*IN 2* LED	Lights when the HDMI 2 input device is connected
14	*OUT* LED	Lights when an HDMI output device is detected
15	*LINK* LED	Lights when the TP connection is active
16	*ON* LED	Lights when receiving power

1 Note that the IR sensor is only used to select the TP-582T inputs. These IR signals cannot be transmitted to the TP-582R

4.3 Your TP-582R HDMI Line Receiver DA

Figure 3 and Table 3 define the **TP-582R**:

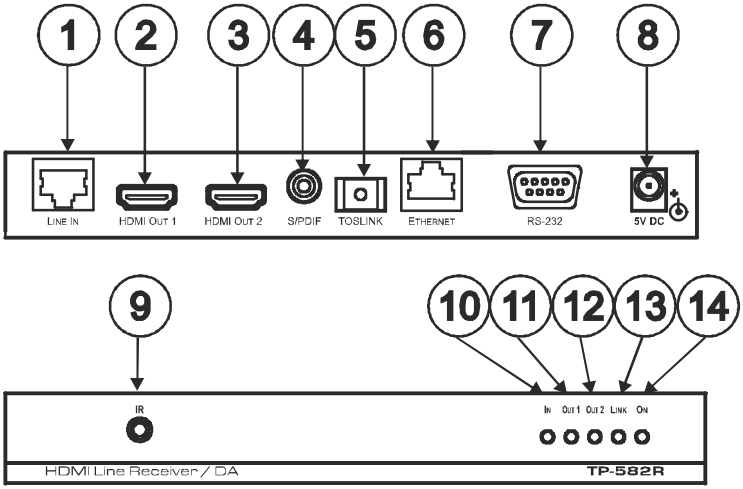


Figure 3: TP-582R HDMI Line Receiver DA

Table 3: TP-582R HDMI Switcher/Line Receiver Features

#	Feature	Function
1	*LINE IN* RJ-45 Connector	Connects to the CAT 5 OUT RJ-45 connector on the **TP-581T** or **TP-582T**
2	*HDMI OUT 1* Connector	Connects to the HDMI acceptor 1
3	*HDMI OUT 2* Connector	Connects to the HDMI acceptor 2
4	*S/PDIF* Connector	Connects to a digital audio acceptor
5	*TOSLINK*® Connector	Connects to an optical audio acceptor
6	*ETHERNET* Connector	Connects to a network
7	*RS-232* 9-pin D-sub Connector	Connects to an RS-232 port
8	*5V DC*	+5V DC connector for powering the unit
9	*IR* 3.5mm Mini Jack Connector	Connects to an external infrared transmitter/sensor (receiver)
10	*IN* LED	Lights when an input device is connected
11	*OUT 1* LED	Lights when the HDMI 1 output device is connected
12	*OUT 2* LED	Lights when the HDMI 2 output device is connected
13	*LINK* LED	Lights when the TP connection is active
14	*ON* LED	Lights when receiving power

5 Connecting the TP-581T, TP-582T and TP-582R

You can use the **TP-581T** *HDMI Line Transmitter* or the **TP-582T** *HDMI Switcher/Line Transmitter* with the **TP-582R** *HDMI Line Receiver DA* to configure an HDMI transmitter/receiver system.

- To connect the **TP-582T** or **TP-581T**, see Section 5.1
- To connect the **TP-582R**, see Section 5.2
- To remotely control the A/V equipment, see Section 5.3

5.1 Connecting the TP-582T or TP-581T

To connect the **TP-582T** or **TP-581T** as shown in the example in Figure 4, do the following:

1. Connect the HDMI IN1 connector to the first HDMI source[1] (for example, a DVD player 1) for the **TP-582T**.
2. Connect the HDMI IN2 connector to the second HDMI source[2] (for example, a DVD player 2).
3. Connect the ETHERNET RJ-45 connector to a network.
4. Connect the RS-232 9-pin D-sub connector to a computer.
5. Connect the IR 3.5mm mini jack to an IR emitter.
6. Connect the REMOTE CONTROL terminal block to an external set of switches (not shown in Figure 4).
7. Connect the LINE OUT RJ-45 connector over CAT 5 twisted pair to the **TP-582R** LINE IN connector.
8. Connect the 5V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in Figure 4).

1 On the TP-581T, connect the HDMI IN connector to the HDMI source

2 There is no HDMI IN 2 connector for the TP-581T

5.2 Connecting the TP-582R

To connect the **TP-582R** as shown in the example in Figure 4, do the following:

1. Connect the HDMI OUT 1 connector to the first HDMI acceptor (for example, LCD display 1).
2. Connect the HDMI OUT 2 connector to the first HDMI acceptor (for example, LCD display 2).
3. Connect the ETHERNET RJ-45 connector to a network.
4. Connect the RS-232 9-pin D-sub connector to an RS-232 port (for example, a projector).
5. Connect the IR 3.5mm mini jack to an IR sensor.
6. Connect S/PDIF RCA connector to a digital audio acceptor (for example, a digital audio recorder).
7. Connect TOSLINK® connector to an optical audio acceptor (for example, a digital audio recorder) (not shown in Figure 4).
8. Connect the LINE IN RJ-45 connector over CAT 5 twisted pair to the **TP-581T** or **TP-582T** LINE OUT connector.
9. If required, acquire the EDID (see Section 5.6).
10. Connect the 5V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in Figure 4).

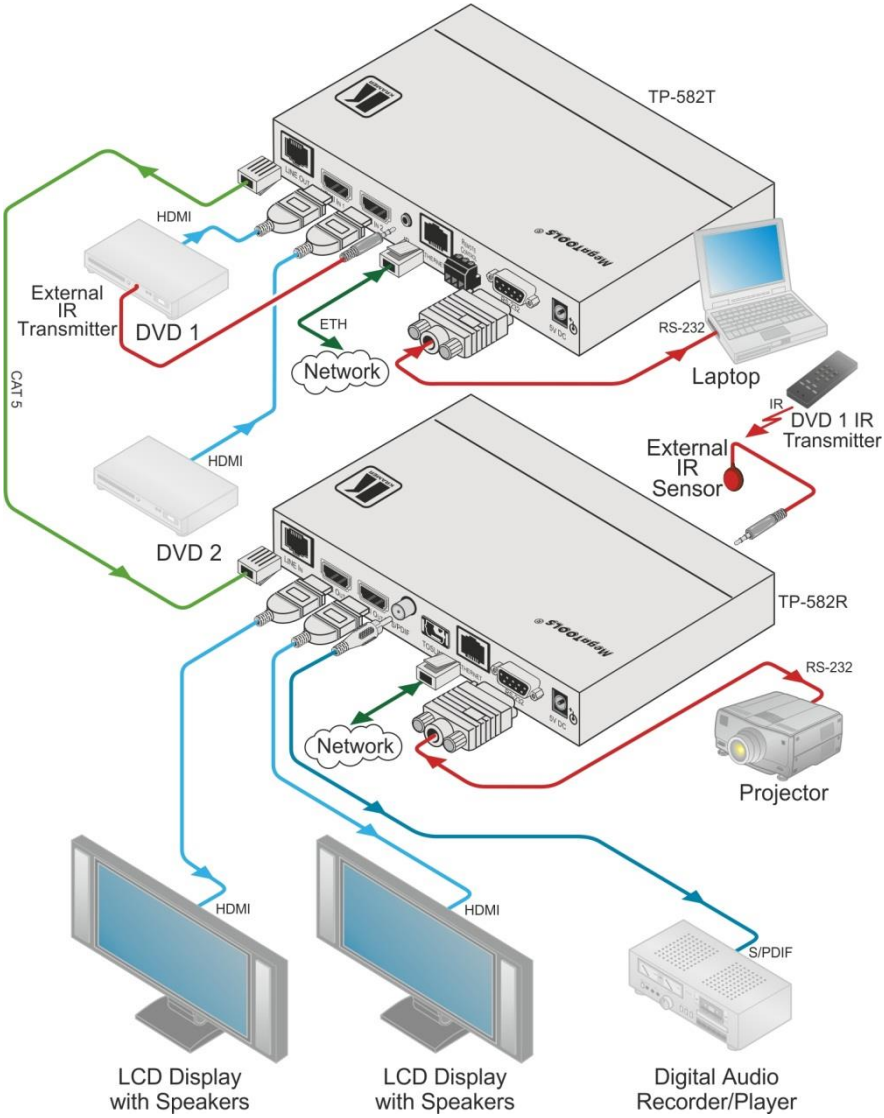


Figure 4: Connecting the TP-582T/TP-582R Transmitter/Receiver

5.3 Controlling the A/V Equipment via an IR Transmitter

Since the IR signal on the **TP-581T**/**TP-582T** and the **TP-582R** is bidirectional, you can use a remote control transmitter[1] to send commands (to the A/V equipment) from either end of the transmitter /Receiver system. To do so you have to use the Kramer external IR sensor[2] and the Kramer IR emitter cable[3].

Note that the IR sensor is only used to select the **TP-582T** inputs. These IR signals cannot be transmitted to the **TP-582R**.

Figure 5 illustrates how to control the DVD player using a remote control via the **TP-582R**.

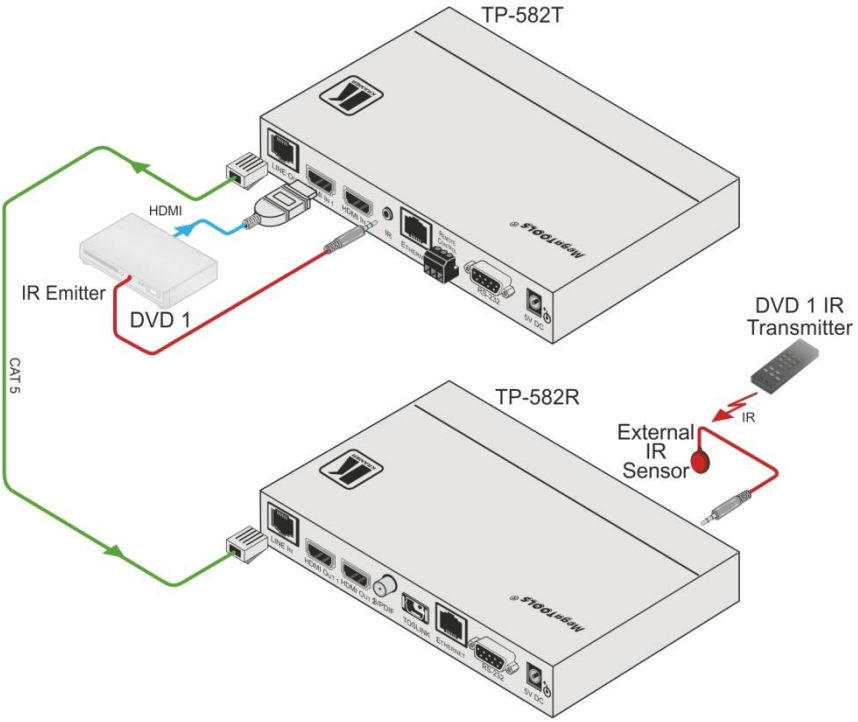


Figure 5: Controlling a DVD Player via the TP-582R

1 That is used for controlling a peripheral device (for example, a DVD player). The Kramer IR remote control transmitter supplied with the TP-582 is used to select the inputs of the machine

2 P/N: 95-0104050

3 P/N: C-A35/IRE-10; two IR Emitter Extension Cables are also available: a 15 meter cable and a 20 meter cable

Figure 6 illustrates how to control the LCD display via the **TP-581T/TP-582T**.

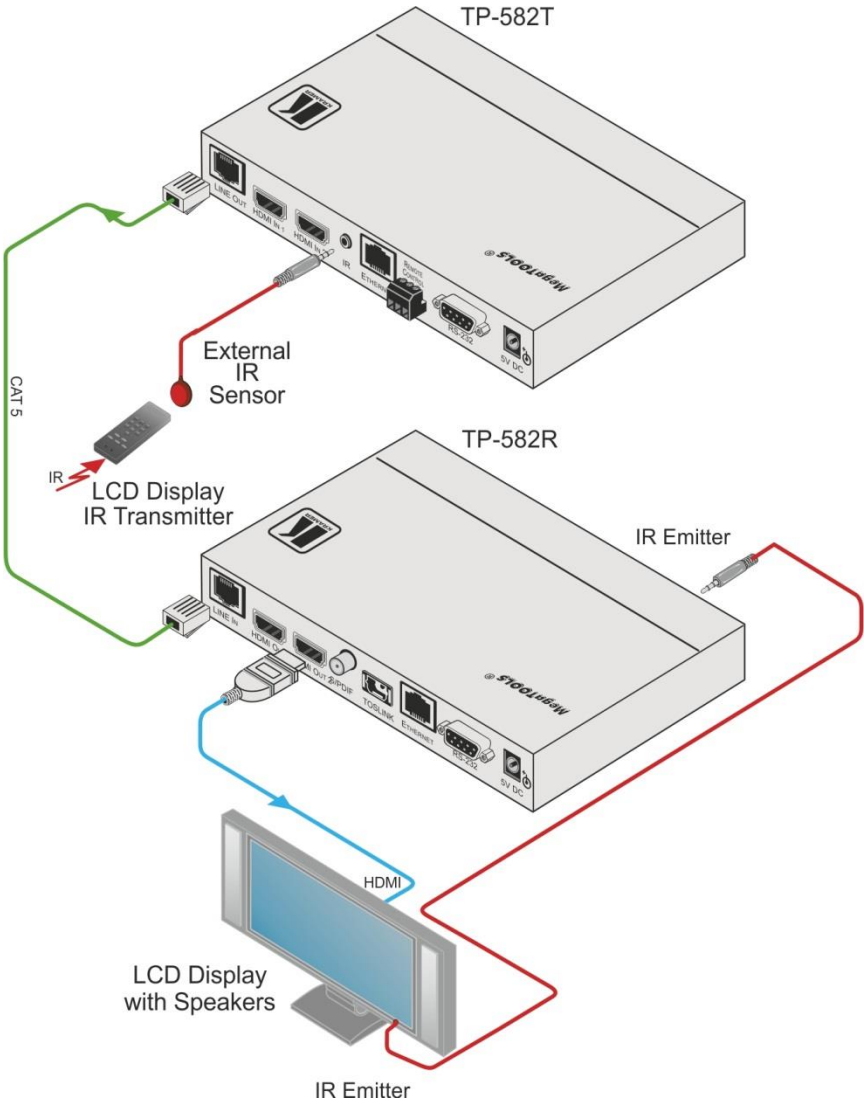


Figure 6: Controlling an LCD Display via the TP-582T

5.4 Controlling the TP-582T via the REMOTE Terminal Block Connector

The contact closure remote control pins operate in a similar way to the INPUT SELECT button. Using the contact closure remote control you can select the HDMI input. To do so, momentarily connect the required input pin (IN 1 or IN2) on the REMOTE CONTROL terminal block connector to the GND (Ground) pin, as Figure 7 illustrates.

Do not connect more than one PIN to the GND PIN at the same time.

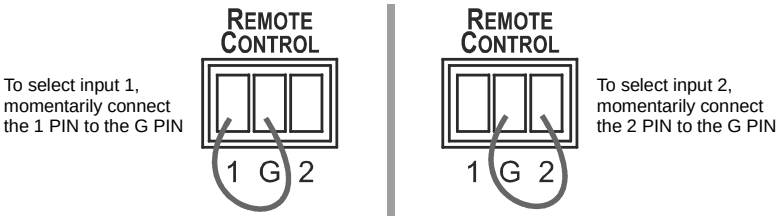

To select input 1, momentarily connect the 1 PIN to the G PIN
REMOTE CONTROL
1 G 2
REMOTE CONTROL
1 G 2
To select input 2, momentarily connect the 2 PIN to the G PIN

Figure 7: Connecting the Contact Closure Remote Control PINs

5.5 Connecting to a PC

You can connect to the transmitter/receiver system via an RS-232 connection using, for example, a PC. Note that a null-modem adapter/connection is not required.

To connect via RS-232, connect the RS-232 9-pin D-sub rear panel port on the transmitter/receiver system unit via a 9-wire straight cable (pin 2 to pin 2, pin 3 to pin 3, pin 5 to pin 5) to the RS-232 9-pin D-sub port on your PC.

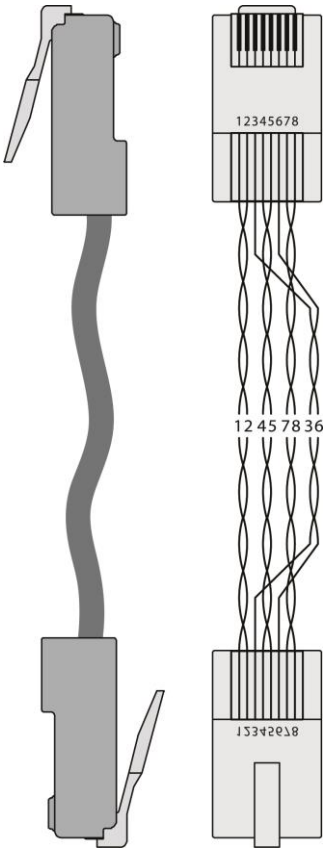
5.6 Wiring the RJ-45 Connectors

This section defines the TP pinout, using a **straight** pin-to-pin cable with RJ-45 connectors.

Note, that the cable Ground shielding must be connected / soldered to the connector shield.

EIA /TIA 568B	
PIN	**Wire Color**
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown

Figure 8: TP PINOUT



5.7 Acquiring the EDID

To acquire the EDID, connect the transmitter and receiver system as described in Section 5.

Once the power is connected, the system acquires the EDID according to the following priorities:

- If only one output is connected, the EDID will be acquired from that output
- If both outputs are connected, the EDID will be acquired from the output connected to HDMI OUT 1
- If no output is connected, the default EDID is acquired

To acquire the EDID of a newly connected output:

1. Disconnect the power on the **TP-582R**.
2. Connect the new acceptor (to HDMI OUT 1, if two outputs are connected).
3. Connect the power.

The EDID is acquired only if the power is disconnected and then reconnected

6 Technical Specifications

Table 4 includes the technical specifications[1].

Table 4: Technical Specifications of the TP-581T, TP-582T and TP-582R

	TP-581T	TP-582T	TP-582R
INPUTS:	1 HDMI connector	2 HDMI connectors 1 remote contact closure on a terminal block connector	1 RJ-45 connector
OUTPUTS:	1 RJ-45 connector	1 RJ-45 connector	2 HDMI connectors 1 TOSLINK® optical audio 1 S/PDIF in an RCA connector
PORTS:	1 IR on a 3.5mm mini jack 1 Ethernet 100BaseT on an RJ-45 connector 1 RS-232 on a 9-pin D-sub connector	1 IR on a 3.5mm mini jack 1 Ethernet 100BaseT on an RJ-45 connector 1 RS-232 on a 9-pin D-sub connector	1 IR on a 3.5mm mini jack 1 Ethernet 100BaseT on an RJ-45 connector 1 RS-232 on a 9-pin D-sub connector
BANDWIDTH:	Supports up to 2.25Gbps bandwidth per graphic channel		
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP		
POWER SOURCE:	5V DC, 800mA	5V DC, 800mA	5V DC, 1.55A
DIMENSIONS:	18.8cm x 11.4cm x 2.4cm (7.4" x 4.5" x 1.0") W, D, H		
WEIGHT:	0.6kg (1.4lbs)		
ACCESSORIES:	Power supply		
OPTIONS:	RK-T2B 19" rack mount, Kramer BC-HDKat6a cable		

1 Specifications are subject to change without notice

7 Default EDID

The factory default EDID is listed below.

```
Monitor
  Model name..... TP-582
  Manufacturer..... KRM
  Plug and Play ID..... KRM5820
  Serial number..... 505-707455010
  Manufacture date..... 2009, ISO week 10
  Filter driver..... None
  ------------------------
  EDID revision..... 1.3
  Input signal type..... Digital
  Color bit depth..... Undefined
  Display type..... RGB color
  Screen size..... 520 x 320 mm (24.0 in)
  Power management..... Standby, Suspend, Active off/sleep
  Extension blocs..... 1 (CEA-EXT)
  ------------------------
  DDC/CI..... Not supported

Color characteristics
  Default color space..... Non-sRGB
  Display gamma..... 2.20
  Red chromaticity..... Rx 0.674 - Ry 0.319
  Green chromaticity..... Gx 0.188 - Gy 0.706
  Blue chromaticity..... Bx 0.148 - By 0.064
  White point (default).... Wx 0.313 - Wy 0.329
  Additional descriptors... None

Timing characteristics
  Horizontal scan range.... 30-83kHz
  Vertical scan range..... 56-76Hz
  Video bandwidth..... 170MHz
  CVT standard..... Not supported
  GTF standard..... Not supported
  Additional descriptors... None
  Preferred timing..... Yes
  Native/preferred timing.. 1280x720p at 60Hz (16:10)
    Modeline..... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync

Standard timings supported
     720 x  400p at  70Hz - IBM VGA
     640 x  480p at  60Hz - IBM VGA
     640 x  480p at  75Hz - VESA
     800 x  600p at  60Hz - VESA
     800 x  600p at  75Hz - VESA
    1024 x  768p at  60Hz - VESA
    1024 x  768p at  75Hz - VESA
    1280 x 1024p at  75Hz - VESA
    1280 x 1024p at  60Hz - VESA STD
    1600 x 1200p at  60Hz - VESA STD
    1152 x  864p at  75Hz - VESA STD

EIA/CEA-861 Information
  Revision number..... 3
  IT underscan..... Supported
  Basic audio..... Supported
  YCbCr 4:4:4..... Supported
  YCbCr 4:2:2..... Supported
  Native formats..... 1
  Detailed timing #1..... 1920x1080p at 60Hz (16:10)
    Modeline..... "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync
  Detailed timing #2..... 1920x1080i at 60Hz (16:10)
    Modeline..... "1920x1080" 74.250 1920 2008 2052 2200 1080 1084 1094 1124 interlace +hsync +vsync
  Detailed timing #3..... 1280x720p at 60Hz (16:10)
    Modeline..... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync
  Detailed timing #4..... 720x480p at 60Hz (16:10)
    Modeline..... "720x480" 27.000 720 736 798 858 480 489 495 525 -hsync -vsync

CE video identifiers (VICs) - timing/formats supported
```

1920 x 1080p at 60Hz - HDTV (16:9, 1:1)
1920 x 1080i at 60Hz - HDTV (16:9, 1:1)
1280 x 720p at 60Hz - HDTV (16:9, 1:1) [Native]
720 x 480p at 60Hz - EDTV (16:9, 32:27)
720 x 480p at 60Hz - EDTV (4:3, 8:9)
720 x 480i at 60Hz - Doublescan (16:9, 32:27)
720 x 576i at 50Hz - Doublescan (16:9, 64:45)
640 x 480p at 60Hz - Default (4:3, 1:1)
NB: NTSC refresh rate = (Hz*1000)/1001

CE audio data (formats supported)
LPCM 2-channel, 16/20/24 bit depths at 32/44/48 kHz

CE vendor specific data (VSDB)
IEEE registration number. 0x000C03
CEC physical address..... 1.0.0.0
Maximum TMDS clock..... 165MHz

CE speaker allocation data
Channel configuration.... 2.0
Front left/right..... Yes
Front LFE..... No
Front center..... No
Rear left/right..... No
Rear center..... No
Front left/right center.. No
Rear left/right center... No
Rear LFE..... No

Report information
Date generated..... 29/04/2012
Software revision..... 2.60.0.964
Data source..... Real-time 0x0031
Operating system..... 5.1.2600.2.Service Pack 3

Raw data
00,FF,FF,FF,FF,FF,00,2E,4D,20,58,01,01,01,01,0A,13,01,03,80,34,20,78,EA,B3,25,AC,51,30,B4,26,
10,50,54,A5,4B,00,81,80,A9,40,71,4F,01,01,01,01,01,01,01,01,01,01,1D,00,72,51,D0,1E,20,6E,28,
55,00,07,44,21,00,00,1E,00,00,00,FF,00,35,30,35,2D,37,30,37,34,35,35,30,31,30,00,00,00,FC,00,54,
50,2D,35,38,32,20,20,20,20,20,20,0A,00,00,00,FD,00,38,4C,1E,53,11,00,0A,20,20,20,20,20,20,01,86,
02,03,1B,F1,48,10,05,84,03,02,07,16,01,23,09,07,07,65,03,0C,00,10,00,83,01,00,00,02,3A,80,18,71,
38,2D,40,58,2C,45,00,07,44,21,00,00,1E,01,1D,80,18,71,1C,16,20,58,2C,25,00,07,44,21,00,00,9E,01,
1D,00,72,51,D0,1E,20,6E,28,55,00,07,44,21,00,00,1E,8C,0A,D0,8A,20,E0,2D,10,10,3E,96,00,07,44,21,
00,00,18,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,47

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

Exclusive Remedy

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS LIMITED WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF KRAMER ELECTRONICS CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN ALL IMPLIED WARRANTIES COVERING THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY TO THIS PRODUCT AS PROVIDED UNDER APPICABLE LAW.

IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A “CONSUMER PRODUCT” UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at www.kramerelectronics.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.

For the latest information on our products and a list of Kramer distributors visit www.kramerelectronics.com **where updates to this user manual may be found.**
We welcome your questions, comments and feedback.

Caution

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

P/N: 2900-000582 Rev: 5

Kramer Electronics, Ltd.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com

P/N: 2900-000582 REV 5